6 Matter as Particles

Part 1 Sectional Exercises

6.1 **A** a. space
(p.39)   b. solids
        c. liquids
        d. gases
        e. solids
        f. Liquids
        g. Gases
        h. melting
        i. freezing
        j. boiling
        k. condensation

(p.40) **B** 1. All things
        2. gases
        3. Some
        4. volume
        5. droplets

6.2 **A** • The sizes of particles (vehicles) are different.
(p.40)   • There are spaces between the particles.
        • Smaller particles (bicycles) can slip into the spaces between the larger particles (motor
          cars).

(p.41) **B** a. Particles
        b. spaces
        c. less than
        d. higher
        e. lower
        f. diffusion
        g. Brownian
        h. smoke cell

(p.41) **C** 1. ×
        2. √
        3. ×
        4. √
        5. ×
        6. √
        7. ×
        8. √
        9. ×
        10. √

6.3 **A** 1. properties
(p.42) 2. motion
3. atom
4. different sizes
5. solid

(p.42) **B** 1. B
2. C
3. A
4. gas
5. solid

6.4 **A** 1. ×
(p.43) 2. ×
3. √
4. √
5. √
6. ×
7. ×

(p.43) **B** a. Bourdon gauge
b. pascal (Pa)
c. gas
d. decreases
e. increases

6.5 **A** 1. the mass per unit volume.
(p.44) 2. g/cm^3 or kg/m^3

3. $\dfrac{75}{50}$ g/cm^3 = 1.5 g/cm^3

4. It sinks in water.
The density of water is 1 g/cm^3.
Less dense substances float on denser ones.
5a. iron nail and mercury
  b. wood, oil and cork
  c. iron nail, water, wood, oil and cork
  d. mercury
  e. cork

(p.44) **B** 1. ×
2. √
3. ×
4. √
5. √
6. ×
7. ×

6.6 1. √
(p.45) 2. √
      3. ×
      4. ×
      5. ×
      6. √

Part 2 Integrated Exercises

(p.46) **A** 1. √
            2. ×
            3. √
            4. ×
            5. ×
            6. ×
            7. √

(p.46) **B** 1. A
            2. C
            3. C
            4. D
            5. B
            6. D
            7. D
            8. C
            9. B
           10. B
           11. D
           12. C
           13. C
           14. B
           15. B
           16. B
           17. D
           18. B

(p.52) **C** 1. solid
            2. gas
            3. atom
            4. compressed
            5. Bourdon gauge
            6. mass per unit volume
            7. thermal expansion and contraction

D 1. THERMOMETER
2. HYDROGEN
3. EXPAND
4. MERCURY
5. SMOKECELL
6. ATOM
7. DIFFUSION
8. CONTRACT
9. PARTICLE
10. DENSITY
Magic word: thermostat

E 1a. bimetallic strip
b. cell
c. brass
d. It will bend down and hit Z, the electric bell rings.
e. It can be used as a fire alarm system.

2.

Substance	Mass (g)	Volume (cm³)	Density (g/gm³)
water		10.5	
ice	11.5		
wood			0.7
cork	2.1		
mercury			13.6
aluminium		30	

a. ice, wood, cork
b. Nothing

3a. A   melting
   B   boiling
   C   condensation
   D   freezing
   X   liquid
b. A & D – 0°C   B – 100°C   C – below 100°C

4a. Its mass can be measured by using a balance.
b. Add some water to a measuring cylinder. Measure the volume. Add the dry sand to the cylinder. Measure the total volume. Total volume – volume of water = volume of sand
c. Density of sand = $\dfrac{\text{mass of sand}}{\text{volume of sand}}$ g/cm³